

What does a **Food Safety Programme** look like?

Food Safety Information for
New Zealand Businesses



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Introduction

What Does a Food Safety Programme Look Like? is a companion guide to the publication *An Introduction to HACCP* (New Zealand Food Safety Authority 2003) which explains how to use Hazard Analysis Critical Control Point (HACCP) to construct a food safety programme for your food business.

This booklet has been written to answer some of the questions that the Authority has been asked about food safety programmes and to give you an idea of how a food safety programme might look. On page 16 you will find a glossary of technical terms used in this booklet and an explanation of their meaning.

What is a food safety programme?

A food safety programme is defined by the **Food Act 1981** (as amended in 1996) as: *a programme designed to identify and control food safety risk factors in order to establish and maintain food safety.*

The food safety risk factors may relate to the production, manufacture, preparation, packaging, storage, handling, transport, distribution or sale of food.

A food safety programme meets the requirements of the Food Act when it is based on the principles of HACCP and is in writing.

The Act requires the owner of a food safety programme to systematically identify:

- the hazards involved in the preparation of food at the premises or vehicle concerned
- how those hazards will be monitored
- the means by which those hazards will be controlled
- the systematic supervision of those controls
- the food preparation tasks, or categories of tasks, that will be carried out
- the skills required
- the people or categories of people who will carry out the tasks
- the training and instruction necessary before the task can be performed
- any ongoing training and instruction that may be required
- regular maintenance tasks that must be carried out in relation to the premises or vehicle concerned.

In addition, the Act states that the programme must set out appropriate record-keeping requirements and provide for audit, on a regular basis, by an approved independent auditor. Where appropriate, the programme must provide for the recall of unsafe food.

Who can write a food safety programme?

You may develop a programme yourself or with the assistance of a consultant. While your programme must meet the minimum requirements of the Act, it is most important that you are comfortable with it and that it fits in with the way you manage your business.

A most important point is that the programme is owned and operated by the management of the food business. Implementing a food safety programme requires a commitment to understand and control the hazards associated with the business.

Most food business proprietors are committed to the idea of producing food that is safe. It is good for customers and it is good for business. Though most proprietors know their business well, it is probably true that not all have complete knowledge of the risks that may be associated with the foods they prepare or sell. This is where a technically competent professional may be able to help.

Any person may sell their services as a consultant. It would pay to choose one who has knowledge of HACCP and of the hazards and appropriate controls that are associated with your business.

Please note that the consultant who helps you to develop your programme cannot be the auditor you choose for the purpose of the periodic audits required by the Act. This requirement prevents any conflict of interest that may be caused by someone auditing their own work.

What does a food safety programme look like?

(Please note that explanations of terms in bold type can be found in a glossary on page 16.)

Provided a food safety programme meets the requirements described above, it can be in any written format that meets your needs. It must be something you understand and can commit yourself to. It cannot be emphasised enough that a food safety programme is not effective unless it has the understanding and commitment of both the management and those who carry it out.

We have been asked many times to describe an appropriate format. There are several possibilities. We offer the information in this booklet as a guideline only. It is not intended to be an exhaustive list of everything that must be included in a food safety programme, but it should help you to develop a framework for yourself.

You may find it helpful to put your food safety programme into a format that makes it easy for you to consult and update, and use to train staff. A combination of layouts – such as procedures, worksheets, flowcharts, schedules and tables – is useful for presenting the necessary information about your food safety programme. The programme should be written in a format that is clear enough to enable an auditor to understand and compare it with what is actually happening in your premises. Cross-references are helpful, and as part of your document control you should include page and version numbers. Version numbers will be useful after you have made any revisions. They will allow you to show that the correct procedures are in use.

In assessing and auditing a food safety programme, the assessor and auditor must be able to easily find all the necessary information to confirm that it meets the requirements of the Act. A simple format will help this process considerably, as well as the periodic audits that will follow. This in turn will mean a quicker approval or audit process and lower evaluation charges and audit fees.

Suggested layout

After you have worked through a systematic hazard analysis that meets the requirements of the Act as described above, what might your food safety programme look like? The following headings and subheadings may help.

Your products:

- description, qualities, intended use, shelf life
- transport
- storage conditions
- labelling, preparation instructions.

Your process:

- procedures and flowcharts
- summary sheet of hazards, controls, critical limits, monitoring, corrective actions
- records.

Your premises:

- location, surroundings, layout, construction, staff facilities
- maintenance and cleaning procedures and schedules.

Your staff:

- personal health policy
- hygiene standards and procedures
- skills, responsibilities
- training programme
- management and supervision.

Recall procedures:

- identification, retrieval, quarantine and disposal
- communication with suppliers, distributors, retailers, media and regulatory authorities.

The general guidelines offered here are intended to cover a wide range of possible operations. Not all details will be relevant to small or simple operations. Tailor the programme to your own particular operation. As it will relate only to your own business, there is no need to include in it anything that is not relevant.

Many procedures and controls within a food business are related to quality and measurement matters. Though the critical issues for a food safety programme relate only to safety and public health, other matters can be included where a business wishes to have a single overall document. It would be practical to ensure that there is clear identification of what is a safety issue and what is not, as the auditor's duty is only to audit the safety part of your programme.

Your products

In order to show that you have worked through a process to identify the hazards and the appropriate controls, we believe you will find it helpful to produce a description of the foods and summarise the process in a product *flowchart*. The New Zealand Food Safety Authority (2003) publication *An Introduction to HACCP* gives more detail on how to carry out a hazard analysis.

Describe your products

The description is more than just a list of products. It should include the characteristics of the products or of 'generic' classes of product, especially those characteristics which affect how it must be stored and how it is prepared for use. You should also consider the food, raw materials, and ingredients that you receive.

Questions to consider

Who might use the food? Is there anyone who should not?

Think about the hazards that might make the food unsafe for older people, pregnant women, or those who are ill, for example. Such people are 'at risk' from certain foods and may need to take extra care to ensure that such food is adequately reheated. Perhaps they should avoid some ready-to-eat foods that cannot be guaranteed free of harmful organisms, such as *Listeria*.

From this you will also be able to identify what information should be on the label, including storage and preparation instructions. What should you tell your customer so as to ensure they

- transport
- store
- prepare
- and use the food properly?

What harm might result if your product is abused or misused by transporters or vendors, or if it is improperly prepared by the end user? Bear in mind that this information may be vital to someone who is 'at risk'.

The following checklist is to help you identify the important characteristics of your product.

Product information

- incoming raw material and ingredients
- physical and chemical characteristics: acidity, moisture, salt or sugar content, and so on
- storage and preparation instructions
- packaging and food contact materials
- labelling
- datemarks
- lot or batch identification.

Your process

Procedures

Write up clear **procedures** for your **processes**. In some cases, a simple description of the operation is enough and in others a flow diagram may be all that is necessary. It depends upon the type and complexity of the operation and the nature of the product. Your procedure should identify everything that actually happens in practice.

An important matter to consider at this stage is the capacity you have in your premises and equipment for safe production, handling and storage of product. How much can you safely prepare, cook or store without compromising safety? There may come a time when a large order or seasonal fluctuation in demand causes you to exceed your capacity to produce the food safely. How will you manage this?

Flowchart

A flowchart provides the best map, or blueprint, of a **procedure**, giving a clear picture of the steps a product goes through. It demonstrates you have a complete understanding of the process and can track a product through to the end. A flowchart may be specific to a product (such as chocolate-coated roast garlic) or a class of products (such as frozen vegetables). Where a class of product is categorised generically (such as cooked restaurant meals) it may be helpful to note variations or differences, if any, that exist in individual foods within the class.

By comparing the flowchart with what is actually going on in practice, you are able to identify any differences between the **procedure** as written and the actual **process** as carried out. Any differences should be rectified by modifying either the procedure or process as appropriate. That is, either change *what you say you will do* or *what you actually do*, so that the two are the same.

Examples of how flowcharts might look are in Appendix 1. Please note the examples are intended for illustration purposes only.

Some points to consider

Incoming goods and raw materials

- specifications and characteristics: What standards will you require suppliers to meet?
- do (or will) suppliers have a food safety programme?
- have they identified and controlled critical hazards during production?
- likely hazards in receiving and handling raw materials and ingredients
- procedures for receiving and storing.

Process

- description of the products or categories of product
- flowchart of process(es)
- systematic identification of hazards
- validation of controls (appropriate and in the correct place in the process)
- critical limits
- is the monitoring practical? (that is, can it be carried out day to day?)
- suitable corrective actions
- verification.

Identifying hazards

The product descriptions and the flow diagrams are useful tools to identify:

- what the **hazards** are for any particular product
- where in the line of production they are introduced
- where the effective **control** or **preventive measure** is needed.

Physical contamination by foreign bodies, such as glass or metal, or chemicals, such as cleansers, is a potential hazard that must be identified and managed. The most significant hazard by far is contamination by disease-causing bacteria and viruses and their survival and growth in the food. Usually the most effort is needed to identify and control the organisms that are likely to be in the particular foods you produce. The table of microbial hazards in Appendix 2 can be used as a guide.

Questions to consider

- What other matter might contaminate a product?
- Could glass, wood, insects, cleaning chemicals or machinery parts cause problems?
- How can you ensure that excess preservatives or other ingredients do not get in?

Identify critical controls

In order to determine what **controls** are **critical**, that is, essential, you will need to think about the **critical limits** for the product or process. This means the range of acceptable standards that apply. The critical limit is a value or measurement, (such as a temperature, acidity or water activity) that *must be met* to ensure safety of the product. The critical limit is what separates safe from unsafe.

Where in the process is it vital that control takes place? This is a **critical control point**. The point at which control is essential for the safety of the food. You should be able to identify how you will measure and record that the critical limit is met at each critical control point. This is the **monitoring** step that allows you to demonstrate that the critical control was in place. It must be practical and able to be carried out consistently.

If there is no control for a particular hazard, then one should be devised if possible. In some cases it may be appropriate to communicate the uncontrolled hazard to the end user. This would usually only be where there is an appropriate control that they can carry out. For example, 'cook thoroughly'. In other circumstances, where no effective critical control can be identified, you may find the process should not be carried out and the product not produced at all.

You should be able to show that all controls are effective against the hazard they address. This means that you need evidence that the procedure you plan will be effective in controlling the hazard. This is known as **validation**. Most controls for common processes are easily validated by reference to well-known standard procedures. Some controls may need analysis or test results to establish their effectiveness.

Some points to consider

Process control

- recipes, measurement of ingredients
- control of pasteurising and/or cooking temperatures and times
- control of acidity (pH) and water activity (Aw)*
- control of refrigeration and/or freezing temperatures
- control of microbiological cross-contamination, including waste removal
- water, ice and steam as ingredients, or in contact with food
- control of physical and chemical contamination for example, stone, glass, insects, cleaning chemicals, excess additives
- final product specifications
- system for stock rotation
- packaging
- management and supervision, including visitors
- documentation and records
- complaint management system.

* Water activity is a measure of the moisture available to bacteria. It may be controlled by adding salt or sugar, or by dehydration. Freezing also lowers water activity.

Storage

- cleaning of storage area
- separation of food from non-food items and isolation of reject or recalled product
- protection from contamination
- correct temperature
- equipment to check temperature
- what to do in the event of a breakdown in storage systems.

Despatch and transport of finished product

- food separated from non-food items
- protection from contamination
- maintaining the correct temperature
- equipment to check temperature
- vehicle maintenance and cleaning
- time taken for delivery
- what to do in the event of a breakdown.

Corrective action

Your food safety programme must identify what you will do if there is a **deviation**. In other words, what to do if the planned control does not take place (such as the oven failing to achieve the correct temperature) or if some incident or change in the **process** introduces a new, unexpected hazard (such as dropping food on the floor). What you will do is termed the **corrective action**. It is a very important part of any food safety programme because it is the part which identifies how you will fix any mistakes or failures that will inevitably arise.

Corrective actions must show how to restore control over the process, prevent recurrence of the problem and, in particular, what will be done with the food to ensure that it is either made safe or is not made available for consumption. For example, if the oven fails to achieve the appropriate temperature, it is not sufficient to specify that an electrician will repair the thermostat. The food that was being cooked must be made safe. It might be either reprocessed or discarded. This is the disposition of the product. Though it may seem obvious it is frequently missed. Disposition may range from reprocessing the food through to destruction.

Monitoring the controls

Do you have appropriate procedures to **monitor** and **record** the controls that are in place? What is monitored and recorded are the details of how the critical limits were met. Records must show that the process was actually carried out as intended and that it achieved the intended outcome of safe food.

The records you keep do not have to be too detailed. They should be sufficient to demonstrate to an auditor that you have consistent control. In general, any control that is **critical** would require monitoring and a record kept that the **critical limit** was met. Other controls may require a standard operating procedure and supervision may be the most effective way to ensure consistency.

A regular internal (self) audit is a good idea. You will be able to improve your programme as soon as it becomes necessary. (If you need to make significant changes to any critical controls don't forget to notify them to the regulatory authority.) An internal audit will also give you a good idea of what to expect when the independent audit is carried out.

Verification

You may wish to incorporate periodic sampling or tests to **verify** that the system is under control. That is, that the critical limits you have monitored actually achieve the intended outcome. In general, the results of routine tests or analyses demonstrate only that the process is in compliance with the food safety programme. This kind of sampling on its own does not necessarily prove that the food is safe because enough samples are not taken to give significant information.

A word of warning

If sampling is intended to be the main method of proving safety, then it must be undertaken within a carefully planned sampling programme in sufficient quantity so that the results will be statistically significant. Otherwise the results *do not demonstrate that a batch of food is safe*.

Statistically significant sampling can prove very expensive. A valid food safety programme, properly implemented and monitored, with periodic verification gives greater assurance of safety than can be expected from test results alone. And it costs a lot less.

Summary table

A useful format for presenting a summary of the hazard analysis is in the form of a table which includes each of the above matters and identifies the responsible operator. An example of such a table is in Appendix 3. This is not a complete document and is intended only as an example of the way a summary sheet might be laid out. Several other methods exist. The table includes, by way of illustration only, some possible issues and possible controls. Some gaps are left to allow you to consider other appropriate information to include.

Your premises

The structure and condition of your premises, and perhaps even its location, may have an impact on food safety.

Consider, for example, a small smoked salmon factory in a farming area where most of the employees come from farms. How might that affect keeping the premises *Listeria* free? Think about your own operation and the ways that food may be contaminated. For example, are any factories nearby producing smoke or fumes that may be drawn into your air conditioning system? A retailer dealing only in packaged foods will have different concerns from someone producing high-risk perishable foods.

What impact will such matters as wall and ceiling surfaces have on the safety of your food? How easy will they be to clean and keep in good condition? How will you schedule the inspections, maintenance and any repairs that may become necessary? How might pests – rodents, birds and insects – get in?

Your food safety programme should demonstrate how you will carry out the cleaning and maintenance necessary to keep the premises and equipment up to the intended standards. The best way to cover these requirements is to develop cleaning and maintenance schedules.

Note: Some matters of structure and cleaning may be critical to food safety and may be identified as critical controls. Maintenance and repair then become part of a corrective action should damage or a defect occur. Do not forget to identify what you will do with food that has been endangered in such circumstances.

Some points to consider

The premises

- location of buildings
- external factors: yards, drains and potential hazards from outside
- preventing entry and infestation by pests
- entry points for people and goods
- design and layout of premises, rooms and equipment
- flow of production
- air quality and ventilation
- lighting and temperature control
- drainage and waste disposal
- personal hygiene facilities and toilets
- structures and fittings – walls, floors, ceilings, overhead fixtures, windows, doors and working surfaces
- containers for waste and inedible substances.

Premises and equipment cleaning and maintenance

- schedule for maintenance and replacement of equipment
- standards of condition and repair
- cleaning methods and procedures for external areas
- cleaning and sanitation of waste disposal areas
- cleaning procedures for *all areas* within the building (or vehicle), including walls and floors, ceilings, overhead fixtures, windows, doors, working surfaces
- cleaning and sanitation programmes for equipment and utensils
- system for monitoring and verifying the effectiveness of cleaning and sanitation
- pest control systems, including hygiene practices, destruction, monitoring and detection of pests.

Your staff

Training and personal hygiene

The Act requires that you identify how you will provide the staff training required. Staff training should be appropriate to your needs and may range from on-the-job instruction to formal education in a particular course or unit standard.

You should be able to show the tasks and knowledge necessary and a means of evaluating that the training is effective. This means describing how you will record that staff members understand their responsibilities and carry out their tasks in the manner expected.

Part of the training must include the personal hygiene necessary to ensure control of food safety. In some cases, your staff may consist of only yourself or family members. It still makes good business sense to identify how you will demonstrate the knowledge and skills you need to carry out your tasks.

Some points to consider

Training

- food hygiene and safety responsibilities of staff and management
- understanding procedures and process responsibilities
- instruction and supervision
- training programmes
- records of training and evaluation of effectiveness
- refresher training.

Personal hygiene and behaviour

- policy
- health of staff
- illness and injuries
- washing facilities
- toilets
- personal cleanliness
- personal behaviour
- sticking plasters

- jewellery
- changing room facilities
- protective clothing.

Recalling unsafe food

Even the best food safety programme may fail. How will you recall unsafe food that has accidentally got onto the marketplace before a defect was discovered? A recall procedure that is already developed will save you time, expense and potential business harm. You can get a useful guideline for recalls from your nearest public health service.

Finally

It cannot be stressed enough that a food safety programme is your document laying out what you agree is important for you and your staff to do in order to produce safe food. To be useful to you it must be practical, easily understood and simple to put into practice. A food safety programme requires your *understanding* of what is *necessary* and your full *commitment* to carrying it out in practice every day.

Definitions

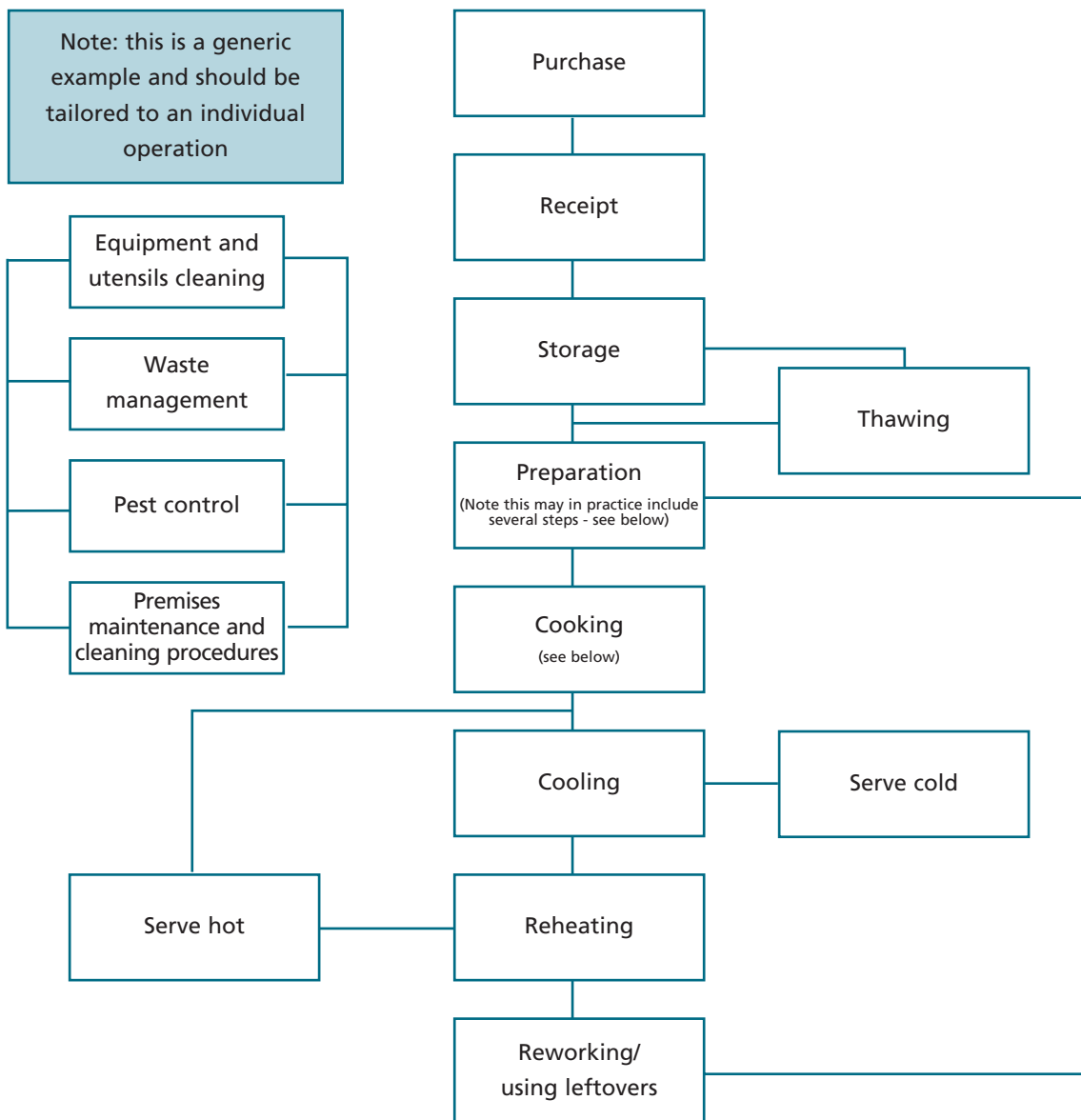
Action plan	Proposed actions or recommendations to be carried out in order to develop, improve or correct a food safety programme.
Approved auditor	An auditor approved by the NZFSA for the auditing of food safety programmes in premises exempt, under the Food Act 1981, from the provisions of the Food Hygiene Regulations 1974.
Audit	A systematic comparison of a defined procedure with an actual process. In food safety terms, a check on documentation and procedures and whether the hazards have been identified and effectively controlled. An audit may be internal or external.
Chemical hazards	Any potentially harmful chemical substance that may contaminate a product. Examples include excessive or toxic amounts of lubricants, metals, chemicals, pesticides, herbicides, insecticides, vitamins, minerals, preservatives, disinfectants, detergents and cleaning compounds.
Code of practice	A generic set of guidelines which defines minimum requirements for food safety and would typically include all stages of the production cycle from raw materials to consumption.
Control	(verb) To manage the conditions of an operation to maintain compliance with established criteria. (noun) The state in which correct procedures are being followed and criteria are being met.
Control point	A process or step which may prevent, eliminate or reduce a hazard to an acceptable level.
Corrective action	Remedial procedures to be followed when a deviation occurs. Action to be taken when the results of monitoring indicates a loss of control.
Critical control Point (CCP)	A process or step at which control is essential so that a food safety hazard is point (CCP) prevented, eliminated, or reduced to an acceptable level.
Critical limit	(a) A criterion (for example, a cooking temperature or time, or a refrigeration temperature) that <i>must</i> be met in order to ensure food safety. (b) A value that separates acceptability from unacceptability.
Cross-contamintaion	The transfer of micro-organisms (or <i>other</i> contaminant) from one food contamination product to another. For example, the transfer of bacteria from raw to cooked meat.
Decision tree	A series of questions to help decide whether a control point is critical.
Deviation	(a) Failure to meet a critical limit. (b) Process change from defined procedure.
Disposition	Action taken with product that has been produced out of control in order to dispose of it or to render it safe.

Documentation	Procedures and records of processes.
External audit	An audit carried out by an independent third party or regulatory body.
External supplier	People who provide the materials and resources from which products and services are created.
Flowchart	A chart which identifies process steps, inputs and outputs (materials), sequential relationships (consecutive, feedback) and food safety controls.
Food safety programme	A programme designed to identify and control food safety risk factors in order to establish and maintain food safety. A self-imposed, continuing, documented system tailored to individual operations to ensure that products are safe and wholesome.
HACCP	<i>Hazard analysis critical control point</i> – a system used to identify hazards associated with a food product and ensure control is established at critical points in the process.
Hazard	A biological, chemical or physical agent with the potential to cause harm when present at an unacceptable level.
Internal audit	An audit carried out ‘in house’.
Microbiological hazard	Any bacteria, virus, or protozoan that is capable of causing illness and that hazard grows on, or is carried on, food.
Monitor	To conduct a planned sequence of observations or measurements to assess whether a CCP is under control and to produce an accurate record for future verification.
Physical hazard	Objects that get into food, or are already present in food, which may cause illness, injury or distress to the person eating it. Some examples are glass, metal fragments and so on.
Preventive measures	The actions and activities needed to remove hazards or to control them by reducing them to acceptable levels.
Procedure	The defined method of carrying out a food process.
Process	The actual method of producing food as carried out in practice. A process should follow the defined procedure.
Records	Information such as check lists, log sheets, instrument charts and records, log books and work diaries. May be formal or informal, but all records <i>must be auditable</i> .
Risk	An estimation of the likelihood of a hazard.
Severity	The magnitude or seriousness of harm resulting from a hazard.
Validation	Evidence that a control, if appropriate for the type of food, and properly carried out, will be effective against a hazard. Validation may be by test or by reference to established knowledge.
Verification	The use of methods, procedures, or tests in addition to those used in monitoring to determine if the process is in compliance with the food safety programme and/or whether the programme needs modification.

Appendix 1

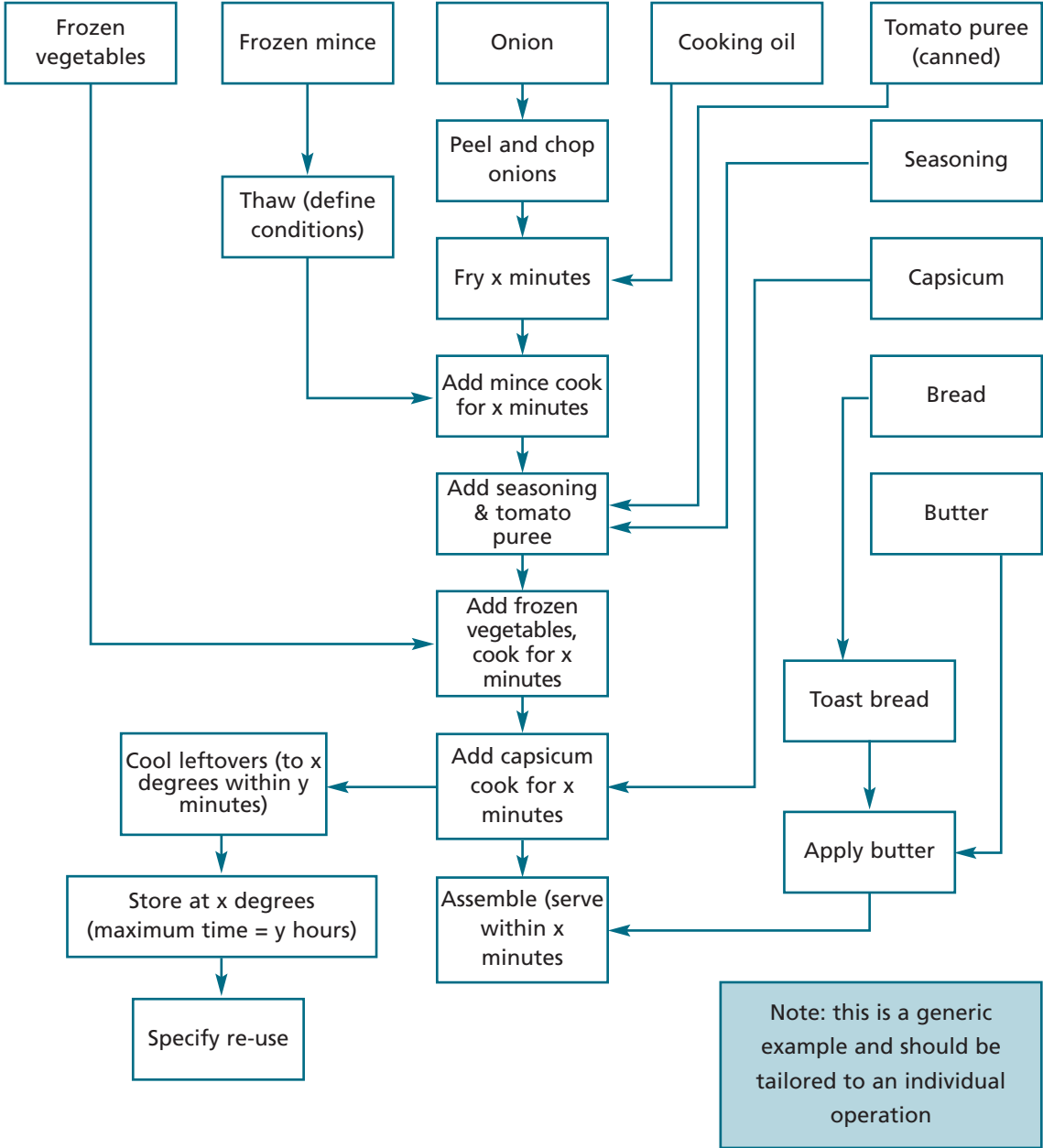
Flowcharts

Example 1 Flowchart for food service

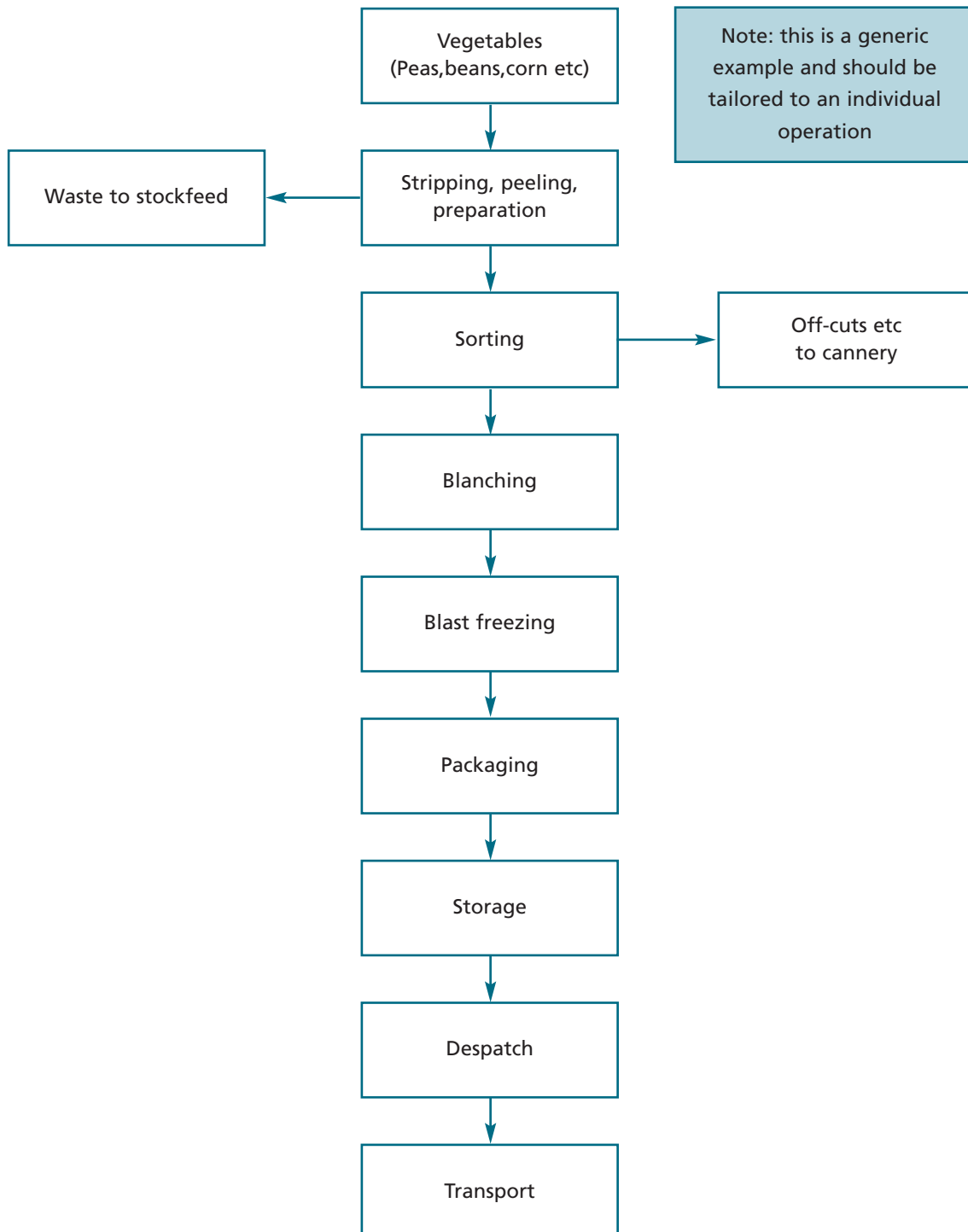


Note: It is not necessary to draw a flowchart for every item that is on a menu or that is manufactured in a factory. Frequently, overall processes can be grouped together according to their similarities, though some ingredients may differ. Hence the description in **example 2** of preparation and cooking steps might be used for a range of products from chilli on nachos and spaghetti bolognese to curry or goulash on rice. **Example 3** might be an example of what is appropriate for a range of vegetables in a freezing process. A flowchart such as **example 4** might be developed for all cooked restaurant meals.

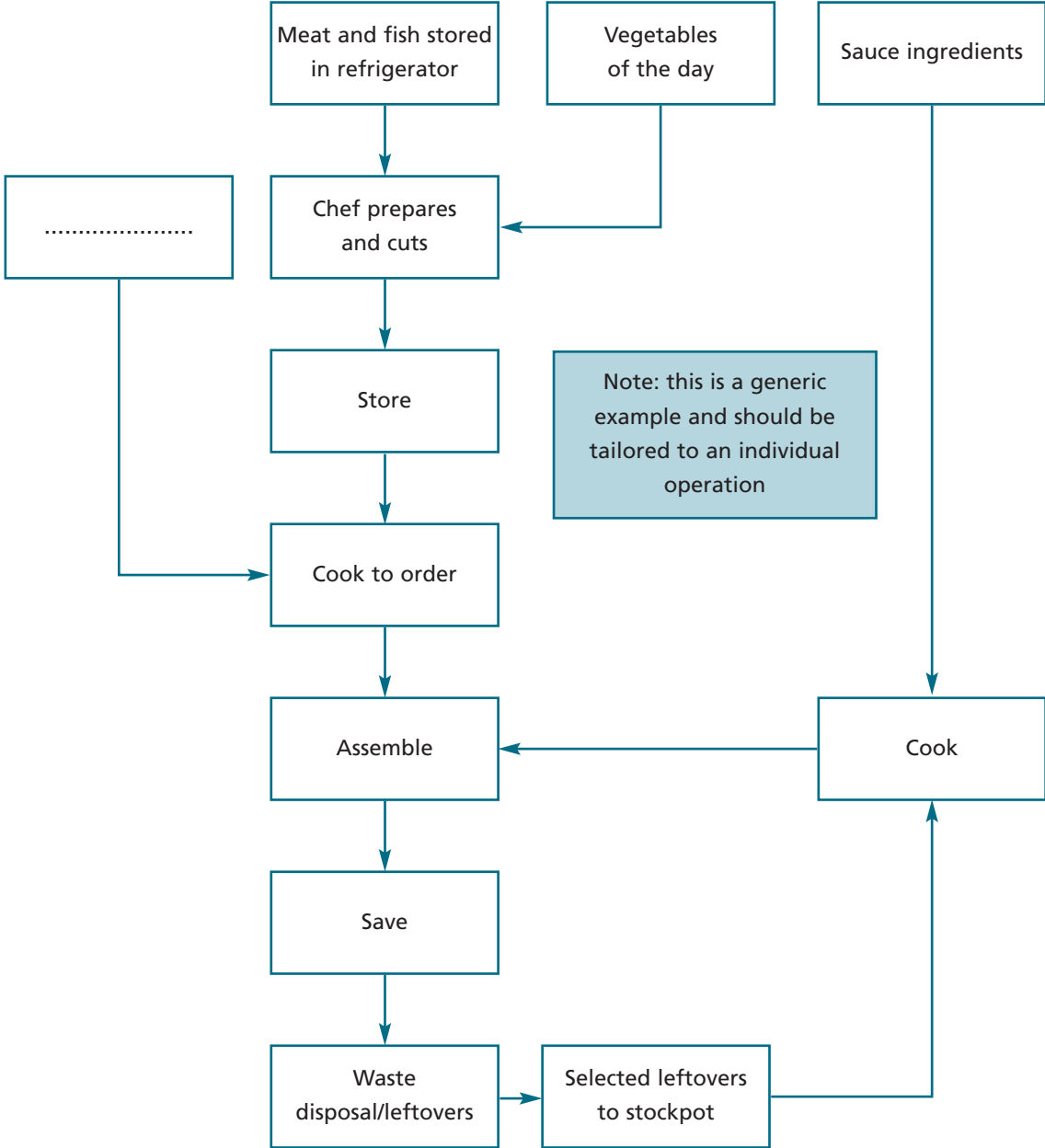
Example 2
Flowchart for
preparation and cooking steps –
savoury mince on toast



Example 3 Category Flowchart – frozen vegetables



**Example 4
Flowchart – Food service
Restaurant meals (cooked)**



A flowchart is only useful if you are able to use it to follow a process and verify that the steps actually take place as described. If there is a significant difference between the flowchart and the actual practice, then one or the other should be modified. Either the flowchart should be amended to reflect what actually happens or the process should be changed in order to do what the flowchart says should be done.

Appendix 2

Summary of selected common foodborne illnesses

Cause of illness	Source	Hazard	Control/Precaution
<i>Bacillus cereus</i>	Present in most raw, dried and processed foods, especially spices, cereals and starchy foods.	Spores survive cooking and grow well in foods such as cooked rice dishes. Growth of the bacteria occurs best at room temperature. Two toxins that survive further cooking may be produced. One causes diarrhoea, another vomiting.	Cool pre-cooked foods quickly in shallow dishes (< 10 cm) and store below 4°C. Alternatively, hold food above 60°C. Do not store pre-cooked rice etc at room temperature.
<i>Campylobacter</i>	Commonly found in animals (especially cattle and poultry), food products of animal origin, water. May be carried by pets.	Survival of bacteria due to insufficient cooking, cross-contamination of cooked foods by raw foods, hands and utensils.	Ensure meats (especially poultry and offal) are cooked adequately . Prevent cross-contamination via surfaces and utensils. Scrupulous hygiene.
<i>Clostridium botulinum</i>	Spore forming bacterium found almost everywhere, especially in soil and agricultural products.	Spores survive and grow in inadequately cooked canned and preserved foods such as meats and vegetables. Usually fatal unless quickly treated. Recovery may take years.	Approved thermal processes for canning and preserving food. Acidification of preserved food. May sometimes grow in deep containers in absence of oxygen. NEVER store stews etc in deep pots.
<i>Clostridium perfringens</i>	Spore forming organism common in soil and on raw foods: vegetables and meat.	Spores survive cooking and germinate in soups, stews and pies that are inadequately cooled or reheated. Food prepared in advance is most at risk.	Hold food at temperatures above 60°C or rapidly chill in shallow trays (max. depth 10 cm). Reheat thoroughly. Reheat pies in an oven, not in a warmer. NEVER store stews etc in deep pots.
<i>Escherichia coli</i> <i>Enterotoxigenic</i> <i>Enteropathogenic</i> <i>Enteroinvasive</i> <i>Enterohaemorrhagic</i>	Lives in the gut (enteric). The types that cause illness are usually of human origin. Certain types commonly in cattle, beef and raw milk.	Survival of bacteria due to insufficient cooking, cross-contamination of cooked foods by raw foods, hands and utensils.	Scrupulous cleanliness, especially after using the toilet. Thorough cooking . Control of cross-contamination.
<i>Listeria monocytogenes</i>	Widespread in the environment. Unpasteurised milk, vegetables, humans.	Grows at normal refrigeration temperatures. May be fatal to older people and the unborn.	Control of handling and prevention of cross-contamination of cooked meat and dairy products. Store below 2.5°C.
<i>Salmonella (non typhi)</i>	Wide range of animals and foods of animal origin – especially poultry and meats; also infected persons/ carriers/food handlers.	As for <i>Campylobacter</i> and <i>E. coli</i> . May rarely be fatal.	Thorough cooking, rapid cooling and control of hygiene and cross-contamination.

Summary of selected common foodborne illnesses (continued)

Cause of illness	Source	Hazard	Control/Precaution
<i>Salmonella typhi</i> and <i>paratyphi</i>	Humans (enteric).	As above. May be fatal.	As above. Exclude carriers from food preparation.
<i>Shigella</i>	Humans (enteric).	Transmitted through poor personal hygiene and inappropriate handling of foods.	Scrupulous cleanliness, especially after using the toilet. Thorough cooking.
<i>Staphylococcus aureus</i>	Humans: from skin, hair, lesions (cuts and sores) nose and throat.	Growth in food causes toxin in food which is not destroyed on reheating.	Personal hygiene, thorough cooking and quick chilling.
<i>Yersinia enterocolitica</i>	Animals: especially pigs, occasionally humans.	May grow under refrigeration in vacuum-packed meats and similar products.	Scrupulous hygiene, especially in preparation of raw meats. Cook pork thoroughly.
<i>Viral Gastroenteritis</i> (eg, Norwalk)	Humans.	Handling (may be airborne – coughs, sneezes etc).	Scrupulous hygiene, cooking and storage.

This list describes most common foodborne illnesses but is not exhaustive. Give particular consideration to the possibility of spore germination and toxin formation in pre-cooked or partly processed products.

Appendix 3: summary charts

Premises feature or processes step	Description	Hazard	Control	Critical limit	Corrective action	Method of recording and responsibility
Receiving	In this section you might elaborate on the matters in the first column.	Identify the potential problems that may affect the food in the step or feature listed.	Identify the way the problem in the last column will be managed or prevented. (Mark CCP if control is critical .)	What is the measurement or observation that demonstrates that the control has been carried out?	What will you do if the critical limit is not met or the expected control fails?	How will you record the information? Whose job is it?
	Receive frozen food.	Temperature abuse: thawed food, microbial growth.	Temperature below -12°C. Not previously thawed. Check temperature log of truck.	Not above -12°C. No evidence of refreezing (frozen drip, clumping).	See procedure manual incoming goods.	Notebook, log storeman.
	Receive chilled foods.	Temperature abuse. Microbial growth etc.	Check temperature log of truck.	Not above 4 °C	Reject.	Notebook, log storeman.
Storage	Receive dry goods.					
	Store frozen food.	Temperature abuse. Freezer breakdown.	Transfer to freezer, within x minutes.	Product temperature maximum x°C.	What will you do with the food?	
	Store fresh food.	Temperature abuse. Out of date. Insect infestation. Contamination by chemicals.	Temperature maintained at x °C. Product out of cooler for less than x minutes. Insect control etc.	x °C. No out-of-date stock. Pest control protocol. No chemicals in area.	Thawed food will be . . . Out-of-date stock will be . . . etc.	Temperature log. 4-hourly check by storeman. Stock log (etc). Pest Control log.

Premises feature or processes step	Description	Hazard	Control	Critical limit	Corrective action	Method of recording and responsibility
Storage continued	Store chilled and perishable food.	Temperature abuse. Out of date. Contamination by chemicals.	Temperature maintained at x °C. Product out of cooler for less than x minutes. Insect control etc.	x°C. No out-of-date stock. Pest control protocol. No chemicals in area.	Thawed food will be ... Out-of-date stock will be ... etc.	Temperature log. 4-hourly check by storeman. Stock log (etc). Pest Control log.
	Store dry goods	Temperature abuse. Out of date. Contamination by chemicals.	Temperature maintained at x °C. Product out of cooler for less than x minutes. Insect control etc.	x °C. No out-of-date stock. Pest control protocol. No chemicals in area.	Thawed food will be ... Out-of-date stock will be ... etc.	Temperature log. 4-hourly check by storeman. Stock log (etc). Pest Control log.
Preparation		Contamination, temperature abuse and microbial growth.	Personal hygiene practices, prepare immediately prior to cooking or return to refrigerator.	No perishable foods at room temperature longer than x minutes.	Dispose of food. Daily log etc.	

Note: This chart is an example for illustration purposes and is not a complete hazard analysis.

The controls and corrective actions are examples and not necessarily the only or best options for any particular circumstances.

This chart relates to the 'mince on toast' flowchart in Appendix 1

Premises feature or processes step	Description	Hazard	Control	Critical limit	Corrective action	Method of recording and responsibility
(NB: selected steps featured – example only)	In this section you might elaborate on the matters in the first column.	Identify the potential problems that may affect the food in the step or feature listed.	Identify the way the problem in the last column will be managed or prevented. (Mark CCP if critical .)	What is the measurement or observation that demonstrates that the control has been carried out?	What will you do if the critical limit is not met or the expected control fails?	How will you record the information? Whose job is it?
Peel and chop onions and fry.	Chop finely.					
Thaw mince.	Thaw in refrigerator 24 hours or in microwave for x minutes.	Growth of toxin forming bacteria and production of toxin.	CCP : Under controlled temperature or within x hours.	Maximum temperature of product 4°C or thawed within x minutes.	Reject.	Notebook log/tick list, recipe checklist or similar.
Add mince and cook.	Cook mince until uniformly browned.		See below.			
Add seasoning and tomato puree.	Cook x minutes until vegetables are tender.	Foreign matter in herbs. Microbial contamination.	Specification, store in plastic container, cook as below.	No glass, wood or foreign matter.	Reject.	
Add frozen vegetables.		Cooling of food and inadequate reheating to complete the cook process.	See below.			
Add capsicum.	Cook x minutes to ensure capsicum is thoroughly heated.	Survival of pathogenic microbes.	CCP : After last ingredient added, observe product boiling for x minutes or measure temperature while stirring.	Boiling for x minutes or x degrees while stirring for y minutes.	Continue cooking until critical limit reached.	As above.

Premises feature or processes step	Description	Hazard	Control	Critical limit	Corrective action	Method of recording and responsibility
Chill leftovers.	To x degrees within y minutes.	Growth of spore forming pathogens that survived the cook process.	Cool in shallow tray to room temp for 30 minutes and place refrigerator CCP .	Product temperature must drop to x degrees within y minutes.	Discard.	As above.
Store.	At x degrees for a maximum of y hours.	Contamination from other foods, temperature abuse (germination of spores).	CCP for some toxin forming bacteria. See below.		Discard.	As above.
Reheat.	To x degrees.	Germination and growth of spores or new contaminant bacteria.	Reheat to temperature that will kill bacteria. CCP .	Boiling for x minutes or x degrees while stirring for y minutes.	Continue cooking until critical limit reached.	As above.
Serve.	Within x minutes of reheating.	Growth of spore forming pathogens that survived the cook process, etc.	Serve within x minutes of reheating. DO NOT REHEAT AGAIN	Discard.	As above.	
Kitchen benches.	Preparation of food.	Cross-contamination.	Cleaned and sanitised regularly and between raw and cooked foods. OR Separate areas for preparation of raw and cooked foods.	Sound condition, no cracks/gaps etc. Cleaned according to procedure.	Reprocess or discard potentially contaminated food as per procedure. Repair if damaged.	Recipe log? Cook's notebook?
Refrigeration.	Coolers, freezers fridges.	Out of temperature range.	Service contract. Thermometer log. Alarm.	For coolrooms, x °C. For fridges, x °C. For freezers, x°C.	If food temperature not above y °C remove to another cooler. If over temperature and time unknown discard. If over within last x hours process immediately or discard.	Logs. Service records. Product records etc.

Premises feature or processes step	Description	Hazard	Control	Critical limit	Corrective action	Method of recording and responsibility
Premises cleaning.	See cleaning schedule.	Contamination of food areas.	Cleaning schedule.	Carried out as per schedule.	Repeat as per schedule.	Observation by supervisor. Record: checklist.
Building maintenance.	Pest access.	Access of vermin and insects contamination of area cleanliness affected etc.	Maintenance schedule prompts repair of accidental damage.	Set as necessary.	Maintenance schedule. Prompt repair of accidental damage.	Maintenance log.
Building maintenance.	What else may be important?					
Equipment maintenance.	Example.	Contamination of food by pieces of broken machinery.	Inspection and maintenance schedule.	No harmful or offensive contaminants.	Trace back any food likely to be affected.	Inspection and service records. Batch reports.
Access by public (where this may be a hazard).	Visitors, inspectors, tradespeople.	Introduction of contamination from the environment.	Provide fresh laundered or cleaned white coats, hats and boots (one possible control). (Obviously this is only appropriate if the staff do it too!)	No uncovered street clothes in factory. No uncovered heads.	Prevent access of unprotected visitors, supply gear.	Visitors book, Supervision.

Appendix 4

Public Health Units

For further advice on food safety programmes contact a Health Protection Officer at your local Public Health Unit:

Auckland DHB	Private Bag 92 605	Auckland	(09) 262 1855
Choice Health	Private Box 58	Masterton	(06) 370 5020
Community and Public Health	Private Box 443	Greymouth	(03) 768 1160
Community and Public Health	PO Box 1475	Christchurch	(03) 379 9480
Community and Public Health	Private Box 510	Timaru	(03) 688 6019
Hawke's Bay DHB	PO Box 447	Napier	(06) 834 1815
Health Waikato	PO Box 505	Hamilton	(07) 838 2569
Hutt Valley DHB	Private Bag 31 907	Lower Hutt	(04) 570 9002
MidCentral Health	Private Bag 3003	Wanganui	(06) 348 1775
MidCentral Health	Private Box 2056	Palmerston North	(06) 350 9110
Nelson Marlborough DHB	Private Box 647	Nelson	(03) 546 1537
Nelson Marlborough DHB	Private Box 46	Blenheim	(03) 520 9914
Northland DHB	Box 742	Whangarei	(09) 430 4100
Pacific Health	Private Bag 1858	Rotorua	(07) 349 3520
Pacific Health	PO Box 2121	Tauranga	(07) 571 8975
Pacific Health	PO Box 241	Whakatane	(07) 306 0720
Public Health South	PO Box 5144	Dunedin	(03) 474 1700
Public Health South	PO Box 1601	Invercargill	(03) 211 0900
Public Health South	PO Box 2180	Queenstown	(03) 442 2500
Tairāwhiti District Health	PO Box 119	Gisborne	(06) 867 9119
Taranaki Health	Private Bag 2016	New Plymouth	(06) 753 7798

For further information please contact:

